

AMENDMENTS TO THE CLAIMS

This Listing of Claims will replace all prior versions, and listings, of claims in the present Application.

Listing of Claims

Claims 1 to 45 (canceled).

46. (Currently amended) A method comprising the steps of:

- (a) functionalizing a plurality of solid phase supports;
- (b) placing the plurality of solid phase supports in a three-dimensional (3D) array using a support transfer device, wherein the 3D array of solid phase supports comprises a plurality of columns of solid phase supports with a plurality of ~~superimposed~~ layers of solid phase supports in the Z direction, wherein the solid phase supports in the columns are substantially aligned, and wherein the support transfer device is a rack comprised of a plurality of rods, each solid phase support having an aperture extending therethrough, the rods being extendable through the apertures in the solid phase supports for support of a plurality of solid phase supports at a time, a mechanism to prevent the solid phase supports from coming off the rack; and
- (c) performing parallel synthesis of a library of molecules in the 3D array of solid phase supports.

47. (Previously presented) The method of claim 46, including performing the step of attaching an initial building block group member to each said solid phase support before the step of placing said plurality of solid phase supports in the 3D array.

48. (Canceled)

49. (Previously presented) The method of claim 46, additionally comprising the step of removing the plurality of solid phase supports from the 3D array with the support transfer device.

50. (Previously presented) The method of claim 46, wherein following the synthesis of said library of molecules, said molecules are cleaved from selected solid phase supports.

51. (Previously presented) The method of claim 47, wherein the step of placing the plurality of solid phase supports in the 3D array comprises assigning at least one unique initial building block group member to each layer.

52. (Canceled)

53. (Canceled)

54. (Previously presented) The method of claim 49, wherein the step of removing the plurality of solid phase supports comprises removing one layer of solid phase supports at a time.

55. (Canceled)

56. (Previously presented) The method according to claim 46, wherein the solid-phase supports are fabricated using material selected from the group consisting of resin, glass,

silica gel, alumina gel, cellulose, polyolefins, polypropylene, polyethylene, halogenated polyolefins, polytetrafluoroethylene, poly(chlorotrifluoroethylene), polyamides, polyimides, poly(paraxylylenes), phenol-formaldehyde polymers, and other material that may be functionalized and is compatible for use in combinatorial chemistry.

57. (Withdrawn) The method according to claim 46, wherein the solid phase supports are selected from the group consisting of tubes, and rings.

58. (Previously presented) The method according to claim 46, wherein the solid phase supports comprise a functionalized graft co-polymer of polypropylene, polyethylene, polytetrafluoroethylene, poly(chlorotrifluoroethylene) or polyolefin.

59. (Withdrawn) The method according to claim 46, wherein the solid phase supports comprise a functionalized graft co-polymer of a halogenated polyolefin.

60. (Previously presented) The method according to claim 46, wherein each of the rods further comprises an obstruction device which has a greater outer diameter than the inner diameter of the solid phase support to keep the solid phase supports immersed in liquid.

61. (Previously presented) The method according to claim 46, wherein the mechanism to prevent the solid phase supports from coming off the rack comprises an end cap that caps a plurality of rods.

62. (Previously presented) The method according to claim 46, wherein each of the rods further comprises an obstruction device which has a greater outer diameter than the inner

diameter of the solid phase support so that the movement of the solid phase supports along the rod is limited.

63. (Withdrawn) The method according to claim 76, wherein the transfer block includes a vacuum orifice.

64. (Withdrawn) The method according to claim 76, wherein the transfer block includes a top retaining wall.

65. (Withdrawn) The method according to claim 76, wherein the transfer block includes an upper gate and a lower gate.

66. (Withdrawn) A method comprising the steps of:

(a) functionalizing a plurality of solid phase supports;

(b) placing the plurality of solid phase supports in a three-dimensional (3D) array using a support transfer device, wherein the 3D array comprises a plurality of columns of solid phase supports and a plurality of layers in the Z direction of solid phase supports, and wherein the support transfer device is a transfer manifold which comprises of

(1) a vacuum manifold,

(2) plurality of tubes, each of which comprises

(A) a first end that is connected to the vacuum manifold, and

(B) a second end communicating with the first end and being subject to suction when vacuum is applied to the vacuum manifold, the suction being applied to extract a solid phase support from each of pluralities of selected columns of said 3D array; and

(c) performing parallel synthesis of a library of molecules in the 3D array of solid phase supports.

67. (Withdrawn) The method of claim 66, including the step of attaching an initial building block group member to each said solid phase support is performed before the step of placing said plurality of solid phase supports in the 3D array.

68. (Withdrawn) The method of claim 66, additionally comprising the step of removing the plurality of solid phase supports from the 3D array with the support transfer device.

69. (Withdrawn) The method of claim 66, wherein following the synthesis of said library of molecules, said molecules are cleaved from selected solid phase supports.

70. (Withdrawn) The method of claim 67, wherein the step of placing the plurality of solid phase supports in the 3D array comprises assigning at least one unique initial building block group member to each layer.

71. (Withdrawn) The method of claim 68, wherein the step of removing the plurality of solid phase supports comprises removing one layer of solid phase supports at a time.

72. (Withdrawn) The method according to claim 66, wherein the solid-phase supports are fabricated using material selected from the group consisting of resin, glass, silica gel, alumina gel, cellulose, polyolefins, polypropylene, polyethylene, halogenated polyolefins, polytetrafluoroethylene, poly(chlorotrifluoroethylene), polyamides, polyimides, poly(paraxylylenes), phenol-formaldehyde polymers, and other material that may be functionalized and is compatible for use in combinatorial chemistry.

73. (Withdrawn) The method according to claim 66, wherein the solid phase supports are selected from the group consisting of rods, disks, tubes, rings, beads, sheets and spheres.

74. (Withdrawn) The method according to claim 66, wherein the solid phase supports comprise a functionalized graft co-polymer of polypropylene, polyethylene, polytetrafluoroethylene, poly(chlorotrifluoroethylene) or polyolefin.

75. (Withdrawn) The method according to claim 66, wherein the solid phase supports comprise a functionalized graft co-polymer of a halogenated polyolefin.

76. (Withdrawn) A method comprising the steps of:

(a) functionalizing a plurality of solid phase supports;

(b) placing the plurality of solid phase supports in a three-dimensional (3D) array using a support transfer device, wherein the 3D array comprises a plurality of columns of solid phase supports and a plurality of layers in the Z direction of solid phase supports, and wherein the support transfer device is a transfer block comprising:

(1) a plurality of recesses, the recesses being sized to receive one or more solid phase supports and being spaced to substantially align with a plurality of wells of the 3D array;

(2) at least one gate slidably engaged with the transfer block, each gate having a plurality of apertures formed therein, wherein sliding the gate into an open position allows one or more solid phase supports to pass through apertures in the gate and sliding the gate into a closed position withholds solid phase supports from passing through the gate; and

(c) performing parallel synthesis of a library of molecules in the 3D array of solid phase supports.

77. (Withdrawn) The method of claim 76, including the step of attaching an initial building block group member to each said solid phase support is performed before the step of placing said plurality of solid phase supports in the 3D array.

78. (Withdrawn) The method of claim 76, additionally comprising the step of removing the plurality of solid phase supports from the 3D array with the support transfer device.

79. (Withdrawn) The method of claim 76, wherein following the synthesis of said library of molecules, said molecules are cleaved from selected solid phase supports.

80. (Withdrawn) The method of claim 77, wherein the step of placing the plurality of solid phase supports in the 3D array comprises assigning at least one unique initial building block group member to each layer of solid phase supports.

81. (Withdrawn) The method of claim 78, wherein the step of removing the plurality of solid phase supports comprises removing one layer of solid phase supports at a time.

82. (Withdrawn) The method according to claim 76, wherein the solid-phase supports are fabricated using material selected from the group consisting of resin, glass, silica gel, alumina gel, cellulose, polyolefins, polypropylene, polyethylene, halogenated polyolefins, polytetrafluoroethylene, poly(chlorotrifluoroethylene), polyamides, polyimides, poly(paraxylylenes), phenol-formaldehyde polymers, and other material that may be functionalized and is compatible for use in combinatorial chemistry.

83. (Withdrawn) The method according to claim 76, wherein the solid phase supports are selected from the group consisting of rods, disks, tubes, rings, beads, sheets and spheres.

84. (Withdrawn) The method according to claim 76, wherein the solid phase supports comprise a functionalized graft co-polymer of polypropylene, polyethylene, polytetrafluoroethylene, poly(chlorotrifluoroethylene) or polyolefin.

85. (Withdrawn) The method according to claim 76, wherein the solid phase supports comprise a functionalized graft co-polymer of a halogenated polyolefin.